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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,306	09/29/2003	Thomas J. Long II	K-2026	1515
7590 08/14/2007				
Larry R. Meenan Kennametal Inc. P.O. Box 231 Latrobe, PA 15650			EXAMINER FRIDIE JR, WILLMON	
			ART UNIT 3722	PAPER NUMBER
			MAIL DATE 08/14/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/673,306

Applicant(s)

LONG ET AL.

Examiner

Willmon Fridie

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Arai et al. ('649).

Arai et al discloses all of the subject matter set forth in the claims including a helical end mill comprising a body having a circumferential face beating a plurality of pockets for receiving cutting inserts, wherein the cutting inserts are arranged in at least two rows and at least three columns on the circumferential face, wherein the angular spacing of the cutting inserts within at least one of the rows varies within the row. ;wherein at least one cutting insert is positioned at a first rake angle, and at least one other cutting insert is positioned at a different rake angle; wherein the first rake angle and the different rake angle both comprise axial rake angles; wherein the first rake angle and the different rake angle both comprise radial rake angles; wherein the lead cutting inserts of different columns display radial rake angles of greater magnitudes than the rake angles of at least some other cutting inserts and the lead cutting inserts of different columns and cutting inserts immediately adjacent to the lead cutting inserts have similar radial rake angles; and lead cutting inserts of different columns and cutting

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inserts immediately adjacent to the lead cutting inserts each display radial rake angles of greater magnitudes than the rake angles of other cutting inserts.

Response to Arguments

Applicant's arguments filed 5/24/07 have been fully considered but they are not persuasive.

Applicant argues that varying angular spacing within a row as recited in the claims is not taught or suggested by Arai '649 and applicant contends that nowhere in Arai '649 is there a teaching or suggestion to vary the angular spacing of the cutting inserts within a row. Therefore, applicant believes that all the limitations of independent Claims 1 or 11 are not taught by the reference.

It is submitted by the examiner that applicant never specifically claims the orientation of the angles relative to any defined point or axis.

Further Arai (' 649) teaches :

...the rotation loci of the edges 6, 6 of the first and second tips 4A and 4B located at the forward end of the end mill body are mutually overlapped with each other. Moreover, the edge 6 of the first tip 4A protrudes slightly farther toward the forward end of the end mill than the edge 6 of the second tip 4B. Accordingly, advantages similar to those obtained in the previous embodiment can be realized.

(43) In addition to the above-described construction, this embodiment is provided with the fourth tips 4D so that the rotation locus of the edges 6 of the fourth tips 4D can be overlapped by the locus of the edges 6 of the third tips 4C. With this arrangement, the cutting load acting upon the individual edges 6 of the third and fourth tips 4C and 4D can be decreased. This can inhibit the degree of the wear and the occurrence of

chipping more reliably, thereby achieving a much longer life of the tips.

(44) Additionally, in this embodiment, the first and second tips 4A and 4B are displaced from each other in the peripheral direction of the end mill body 1. Then the fourth tips 4D are further displaced from the first, second and third tips 4A, 4B and 4C about the periphery of the end mill body. With this arrangement, the peripheral distance between the edges 6, 6 of the first and second tips 4A and 4B differs from the peripheral distance between the edges 6, 6 of the third and fourth tips 4C and 4D. This differentiates the cycle in which a cutting load acts upon the forward end of the end mill body from the cycle in which a load acts upon the portion adjacent to the base end of the end mill during a cutting operation.

It appears that the cutting insert within a row would angularly spaced apart differently due to Arai's discussion about the "rotation locus". Again absent any clear language defining the orientation, location and position of a central axis or point it appears that Arai inherently would meet the limitation of varied angular spacing.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Willmon Fridie whose telephone number is 571 272 4476. The examiner can normally be reached on Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MONICA CARTER can be reached on 571 272 4475. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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WILLMON FRIDIE, JR.
PRIMARY EXAMINER